Master of Applied Cybernetics

2021 Application Pack

3AINSTITUTE.ORG

26 June 2020
Who is building, managing and decommissioning our Ai-enabled future?

This question is at the heart of our mission at the 3A Institute (3Ai).

Located within the College of Engineering and Computer Science at the Australian National University, 3Ai is guiding and accelerating into existence a new branch of engineering centred on effectively and ethically managing the impact of artificial intelligence (AI) on humanity, through better design and management of technology.

3Ai explores different ways into education – from training a new type of engineer to bringing skills development to the broadest cross-section of society. The Institute conducts novel research and brings together people from different places, backgrounds and disciplines to activate a systems approach to building a safe, sustainable and responsible AI-enabled world.

The 3Ai Master of Applied Cybernetics is the first graduate program that grapples with the challenge of bringing intelligent cyber-physical systems safely to scale. In 2019, the 3A Institute ran the first pilot as a collaborative experiment to help incubate the intellectual framework of the new branch of engineering. The second pilot is currently running in 2020 and we are continuing this mission in 2021 with the third pilot.

We are now seeking the next cohort of students for this third pilot who will continue to shape this new branch of engineering, through engagement with our model of collaborative learning, teaching and researching. Graduates gain cognitive, technical and creative skills to investigate, analyse and synthesise complex information, problems, concepts and theories and to apply established theories to different bodies of knowledge or practice.

Master of Applied Cybernetics at a glance

Admission: competitive entry (see page 4), small cohort (15-20 students)


Fees: Successful candidates receive a 50% reduction in fees. Students may be eligible for scholarships. More information will be available later in the application process.

This application pack provides details on how to apply for one of the limited number of positions on this degree program in 2021.
We are recruiting a small cohort of student participants for entry into the 3Ai Master of Applied Cybernetics. Selected participants will undertake the program over one year.

Candidates must be ready to start in February 2021 and commit full-time until February 2022, in person, on the ANU campus (including with all visas in place as necessary).

We encourage diversity in background, education, experience, gender, orientation and aspiration.

Following shortlisting of applications, 3Ai will discuss the following admission requirements with each shortlisted candidate:

**Admission requirements:**

- A Bachelor degree with honours or international equivalent, or higher qualification, and GPA of 5/7; **OR**
- A Bachelor degree or international equivalent with a minimum GPA of 5/7 and a minimum of 3 years full-time, relevant work experience; **OR**
- GMAT (Graduate Management Admission Test), completed no more than 5 years before the time of application, with a minimum score of 600 (minimum 5.0 in Analytical Writing) and a minimum of 3 years full-time, relevant work experience; **OR**
- GRE General test, completed no more than 5 years before the time of application, with a minimum score of 155 for Verbal Reasoning, 155 for Quantitative Reasoning and 4.0 in Analytical Writing and a minimum of 3 years full-time, relevant work experience.

All applicants must meet the University’s English Language Admission Requirements for Students.

If you do not meet the first 2 requirements above, do not take the GMAT or GRE General Test until 3Ai has contacted you about your application.

The following additional elements **may** be taken into consideration for ranking purposes for admission into the Master of Applied Cybernetics courses but are not mandatory admission requirements:

- A track record of outputs illustrating intellectual leadership in your field, such as (but not limited to):
  - Awards, grants and projects secured
  - Publications, media, policy briefings, outreach activities, guidelines and training delivered
  - IP, products and product concepts created

- Demonstrated aptitude for sharing expertise with, and learning from, peers, stakeholders and partners.

- A demonstrated ability to communicate complex ideas across disciplines, media and sectors, to a range of audiences.

- A demonstrated ability to operate with a high degree of flexibility and openness to calculated risk-taking. Demonstrated determination and resilience. Aptitude for working in uncertain and fast-changing environments.

- Demonstrated aptitude for interdisciplinary / transdisciplinary collaboration

- Individual and/or group-based professional / entrepreneurial / community service contributions. Experience in one or multiple of these fields (highly regarded): education, policy, technology, business, the arts, science, engineering, computing, social sciences, and entrepreneurship.

- Ability to operate across disciplinary silos. Ability to think laterally and critically. Collaborative and mission-driven mindset.
Application Process

3Ai Master of Applied Cybernetics (commencing February 2021)

The competitive selection process will include a formal application and interview process, to select a small cohort of students to undertake the 3Ai Master of Applied Cybernetics and receive a 50% reduction in tuition fees.

Application to the Master of Applied Cybernetics

We will select members of the 2021 cohort through a three-step competitive process running from July to October 2020.

Applicants must be available to participate in phone and in-person interviews (face-to-face where possible, otherwise by video) throughout the selection process.

All dates and times are in Canberra time (AEST).

I. Applications open: 26 June 2020
Applications close: 11.59pm 21 August 2020

Submit your application in accordance with the 3A Institute’s application process, found on our website.

Your application must include:

• Your up-to-date CV / resumé;

• A cover letter (max 2 A4 pages) addressing admission requirements of the Master of Applied Cybernetics listed in the Student Profile section above;

• One Portfolio Piece that succinctly demonstrates your interest in the program. Your Portfolio Piece must be your own work and can be in any format – e.g. a short piece of writing, an artwork, a video recording, a piece of software, a poem, a blueprint, etc. – we encourage you to be creative! To avoid disappointment, we recommend you contact us early if your portfolio piece is a large file or requires unusual software to be opened. You can email us at 3ainstitute@anu.edu.au.

• If your file is larger than 5GB, please contact us at 3ainstitute@anu.edu.au. We will assist you to find an alternative submission process.

We will contact applicants by mid-September 2020 and invite shortlisted applicants to the next stage.

II. Phone interviews: September 2020

Congratulations on making the shortlist! The selection panel will arrange a 20-min phone interview with you.

We will contact applicants by 1 October 2020 and invite further shortlisted applicants to the final stage.

III. Face to face interviews: October 2020

The final round of interviews! Meet our selection panel for a 20-minute interview on the ANU campus or via video link.

We will extend offers to undertake the 3Ai Master of Applied Cybernetics to the top-ranked candidates by 1st week of November 2020. Candidates will have 1 week to formally accept the offer.

Successful candidates who have accepted their offer will be invited to complete their application formalities by applying for the Master of Applied Cybernetics through the Universities Admission Centre (domestic students), or directly to the university (international students) in line with the ANU application process.

Successful candidates will automatically receive a 50% reduction in tuition fees. Scholarships for living allowances may be available and can be applied for upon acceptance of offer.

Summary of key dates

- Applications open: 26 June 2020
- Applications close: 11.59pm 21 August 2020
- Applicants contacted: Mid-September
- Phone Interviews: Late-September
- Face to face interviews: Mid-October
- Offers made: Early-November
- Acceptance of offer by: Mid-November
The Master of Cybernetics has an overarching aim: to create pioneers of this new branch of engineering. Now in its 3rd iteration, your participation in this program means not just grappling with but also testing the principles we have developed so far.

Participants are expected to dedicate 40 hours per week to the program, for the one-year duration of the on-campus delivery component (subject to the usual university holiday breaks). Around 20 hours per week will be contact hours. The remaining hours per week will be reading, listening, reflecting, viewing, discussing and writing, as well as individual and group projects.

**Course Structure**

The 1-year intensive component of the Master of Applied Cybernetics (running from February 2021 – February 2022) is divided into 4 courses which interact and reinforce each other.

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Units</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Questions’</td>
<td>Semester 1 2021</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>‘Practice’</td>
<td>Semester 2 2021</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>‘Build’</td>
<td>Semesters 1 &amp; 2 2021</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>Applied Cybernetics Experience</td>
<td>Spring—Summer session 2022</td>
<td>Flexible format</td>
<td></td>
</tr>
</tbody>
</table>

This course will start to create pioneers who can critically examine new and emerging technological constellations and the questions they raise for human society. It challenges participants to (a) engage with technological detail and understand the building blocks of the technologies around us, (b) integrate multiple disciplinary perspectives in order to move from a focus on solving problems, to a focus on framing critical questions about cyber-physical systems (CPSs).

This course uses a case-study approach focusing on emerging CPSs. It is designed to (a) provide participants with an appreciation of the complexity and dynamics of the settings in which CPSs are planned, designed, built, operated and maintained, and (b) give participants a practical grounding in new and existing approaches they could use to analyse and intervene throughout the CPS lifecycle. Building on the critical framework established in ‘Questions’, this course challenges participants to explore the key questions of autonomy, agency and assurance, plus how we decide metrics for success and what the interface looks like, when planning, designing, building, operating and maintaining cyber physical systems.

This course will give participants a hands-on understanding of new and emerging technological constellations and their separate components. Participants will complete a range of lab-based projects to develop an understanding of settings in which CPSs are planned, designed, built, operated and maintained, and (b) gain confidence in designing, building and understanding learned in Fundamentals I and II into practice. Through learning-by-doing, participants will complement their existing skillsets and gain the mastery required to build and guide teams developing and understanding new and emerging technologies.

Within this course, experiences offered will vary from year to year. This course will enable students to develop competencies expected of professionals working in business, government, academia or the broader community. There may be placement opportunities available, for which students can apply. A holistic selection process will be used to select the best applicant for each opportunity. Students can also propose placements or research projects, but these will always be established following negotiations between the ANU and the potential host organisations or project sponsors, before being offered to students along with other opportunities.

*Note: students may apply for credit to reduce the number of units required to complete the Master of Applied Cybernetics, to be addressed post-admission.*
Good Luck!

More information

You can find more information in the Frequently Asked Questions document available on the 3A Institute website.

If you still have questions, please contact us at 3Ainstitute@anu.edu.au.

Keep in touch

Join our mailing list at this link: http://bit.ly/3Aisubscribe

Follow us on Twitter @3Ainstitute

Visit our website: 3ainstitute.org

COVID-19 announcement

The model of delivery in 2021 for 3A Institute’s Master of Applied Cybernetics at the Australian National University is subject to an evolving response to COVID-19. Depending on restrictions in place for the safety of our community, the intensive, in-person delivery model of this program may change. At this time, eligibility to undertake this degree does require your ability to attend the course in-person at the Australian National University, Canberra.

For an update on the University’s response to COVID-19 and travel advice that may affect your ability to undertake the course, please refer to these links: ANU COVID-19 advice. Entry restrictions into Australia, Department of Home Affairs website

Other General Resources: You can call the Coronavirus Health Information Line on 1800 020 080 if you are seeking information on COVID-19. The line operates 24 hours a day, seven days a week. For the most up-to-date information about the virus and health advice, please visit the Australian Government Department of Health website and the ACT Health website.

For more information and the University’s response to COVID-19, please visit the dedicated ANU website